ANALYSER OF 3-PHASE POWER NETWORK PARAMETERS
ND1 TYPE

First Start

CE

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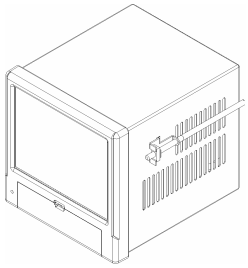
Poland (UE)

Caution!

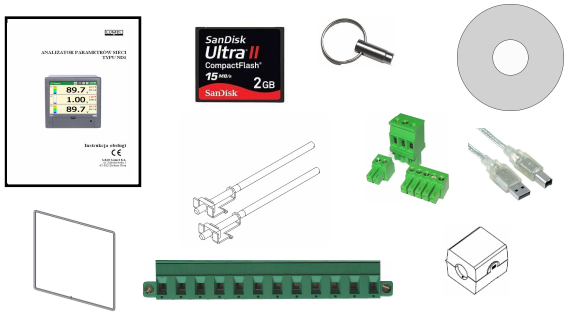
Before approaching to fit and activate the device, you must become absolutely familiar with safety requirements (see section 1.3.)!

Quick Start

❶ Unpack



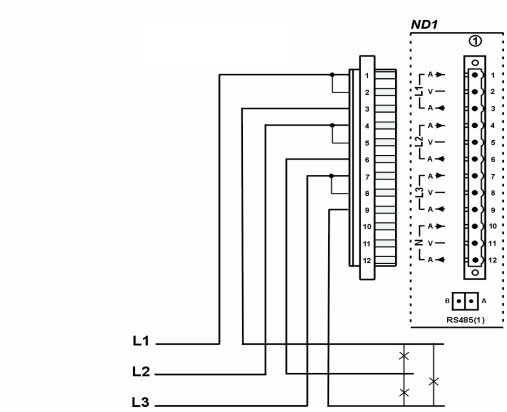
ND1 analyser

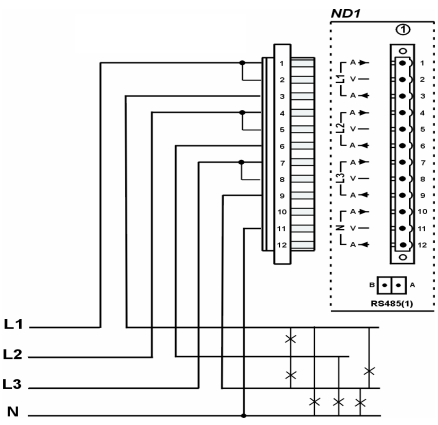


Accessory set

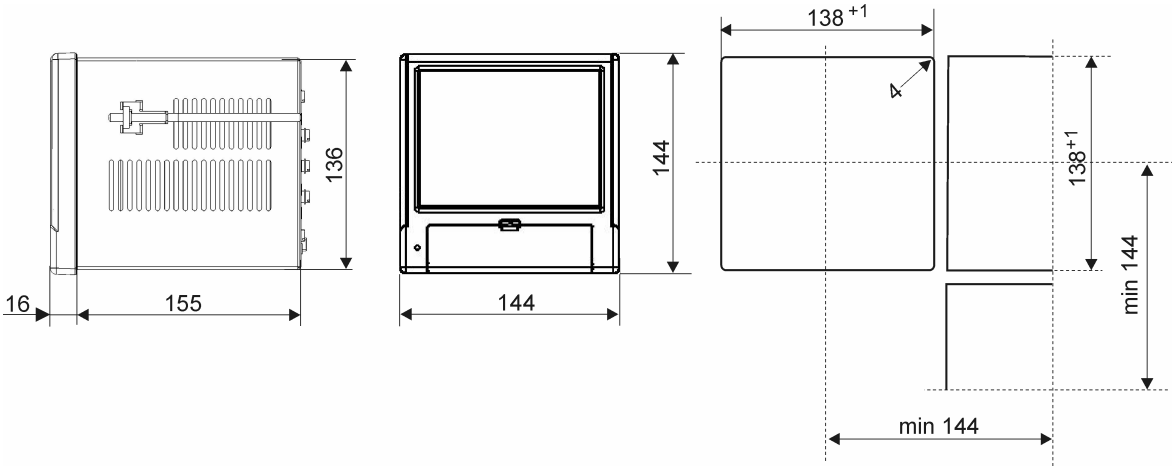
❷ Prepare the supply wire using the delivered plug and the power supply filter **(do not connect to the supply!)**.

❸ Prepare the connection of measuring signals using the plug strip delivered with the ND1 accessory set.



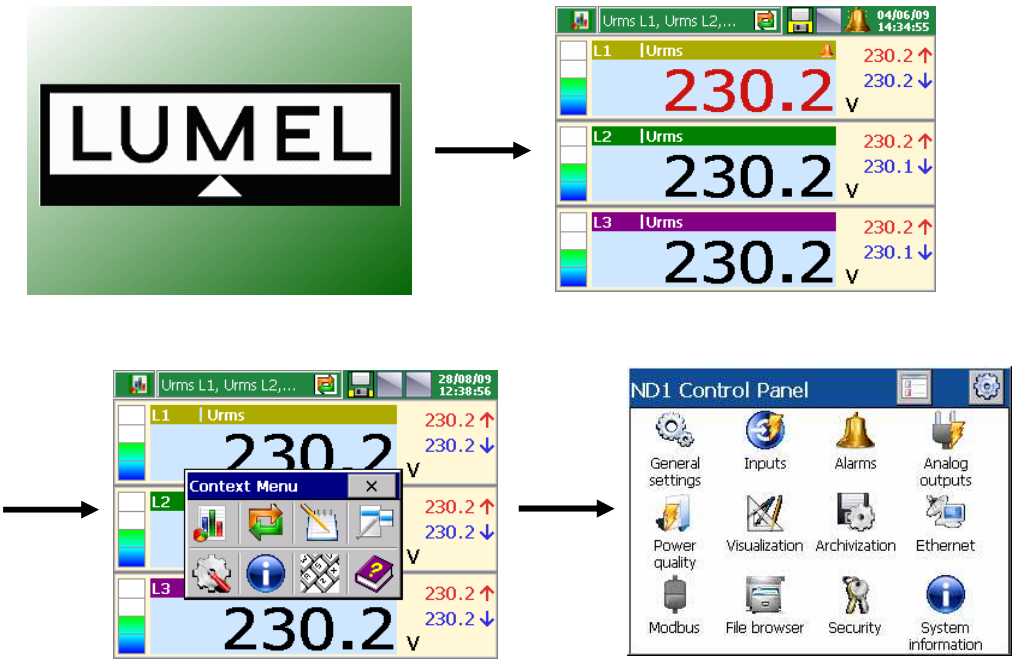


❹ Install and fix the analyser in the panel by means of delivered brackets, and the seal.



❺ Connect the power supply

❻ Carry the first configuration on.



General information

1.1. Introduction

The aim of this document is to help in the quick preparation to work of the **ND1 Analyser of 3-phase Power Network Parameters**, so-called “first start”.

It is an integral part of the whole documentation delivered with the device. The complete user’s manual has been placed on the CD enclosed to the delivered device and constitutes fundamental information about the product and its usage and possible applications.

The complete user’s manual is also available on the manufacturer’s web page at:

http://www.lumel.com.pl.

1.2. Device Application

The ND1 analyser is applied for the measurement and analysis of 3-phase, 3 or 4-wire power networks parameters, in balanced or unbalanced systems.

1.3. Selected Remarks Related to the Device Installation

Note: You must acquaint with the full list of remarks related to safety principles included in the user’s manual, in the chapter 3.3 “**Analyser Work Conditions**”.

In its scope, it is recommended to observe following recommendations:

- **All operations concerning mounting and preparing electrical connections must be carried out by personnel with suitable entitlement. Moreover, national regulations for the prevention of accidents must be observed.**
- Do not supply the analyser from networks near the devices generating pulse noises in the supply network and do not use common grounding circuits with them.
- All shields should be earthed unilaterally, near the analyser.
- Avoid a common earth conductor with other devices.
- Apply the general principle that wires (group of wires) leading different signals should be LED in the longest possible distance between them and crossing of such groups should be made at right angle.

- A switch or a circuit-breaker should be installed in the building installation and located near the analyser, easy accessible by the operator and suitably marked.
- It is not allowed to disassemble the analyser.
- Protections ensuring the device safety can be less effective in case of exploitation inconsistent with manufacturer's indications and principles of a good engineering practice.

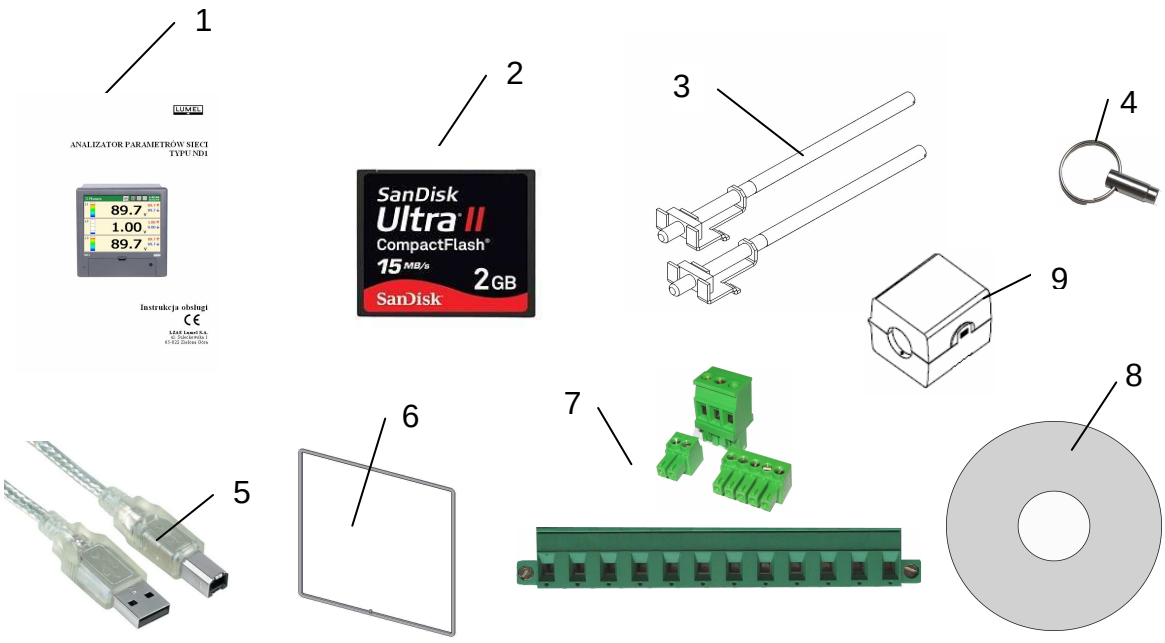
Preparing the Device to Work

1.4. Unpacking

A. Take the ND1 analyser out from the shipping packing.

The data plate with the version code, factory serial number and supply parameters are placed on the analyser casing. Check the conformity of the analyser version with your order.

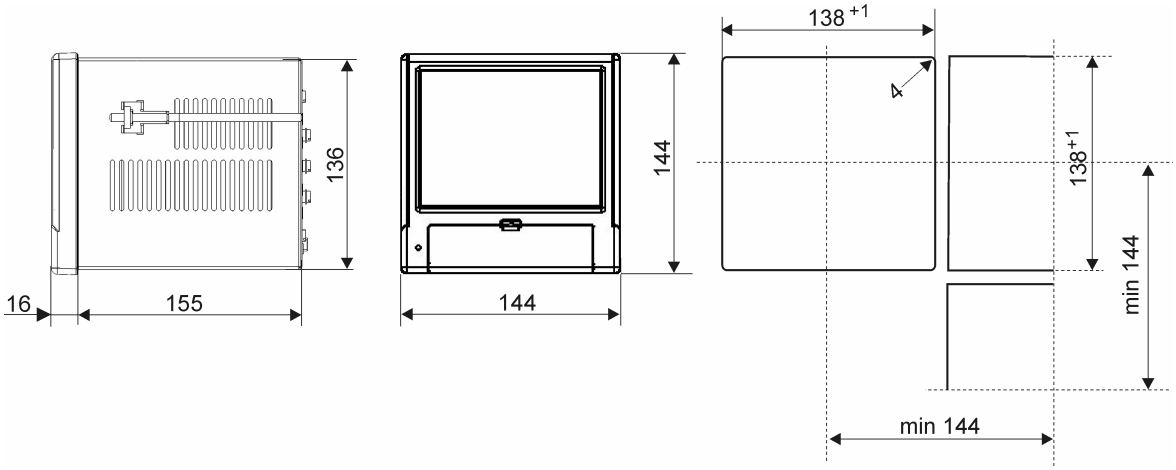
B. Take accessories out from the shipping packing.



1.	User's manual ("First Start")	1 pc
2.	CompactFlash memory card	1 pc
3.	Fixing brackets	4 pcs
4.	Keys	2 pcs
5.	USB cable of 1.8 m long (shielded)	1 pc
6.	Seal (ND1 casing - panel)	1 pc
7.	Set of plugs	1 pc
8.	CD with the software and user's manual	1 pc
9.	Power supply filter	1 pc
	Guarantee card	

Note: Before unpacking the memory card, you have to carry away electrostatic charges from the body.

1.5. Installation in the Panel

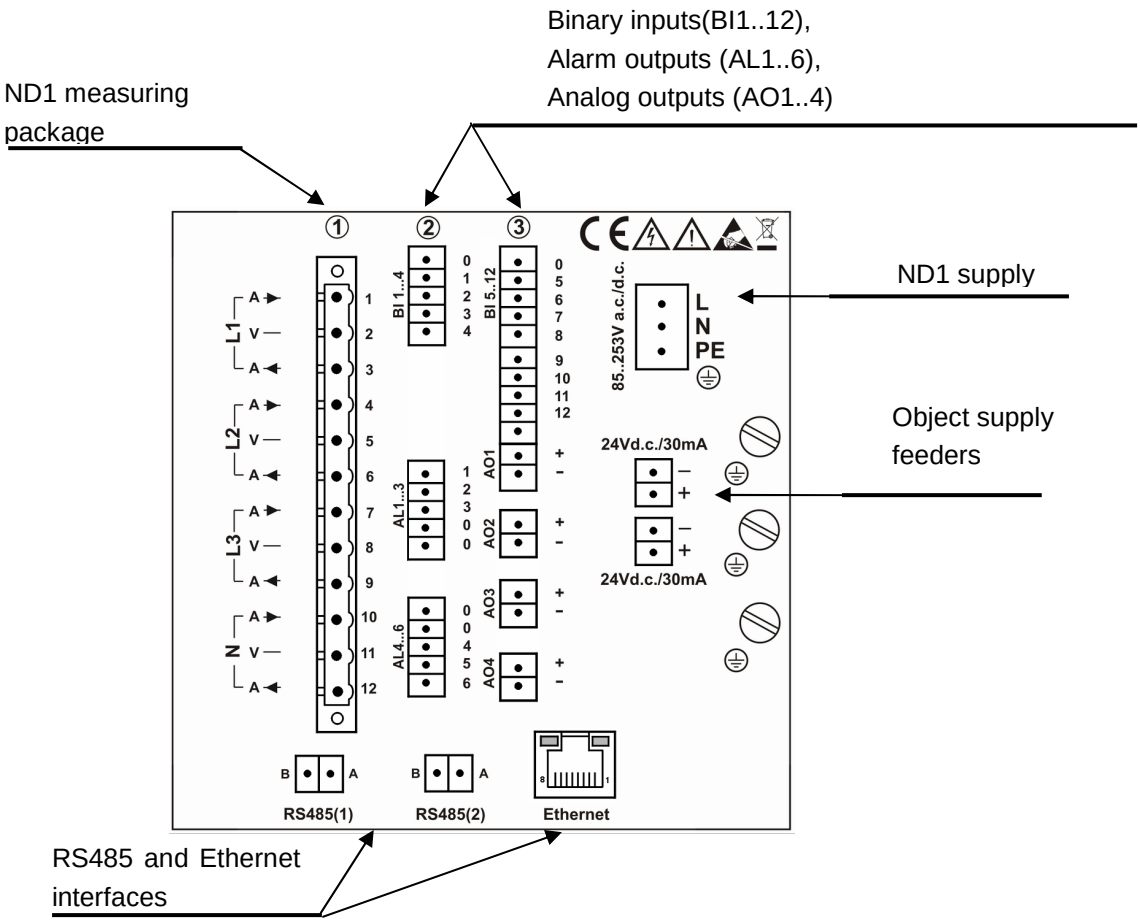


Put the seal from the standard accessory set on the casing (see section 1.4). After fixing the analyser into the panel, the seal protects the part behind the panel against the influence of risks appearing from the panel frontal side resulting from the IP65 protection grade. The ND1 analyser is fixed to the panel by means of four screwed fixing brackets from the standard accessory set (see section 1.4). Basic fixing and panel cut-out dimensions are presented on the above figure.

1.6. Analyser Operating Conditions

The analyser can work at ambient temperature 0...+50ºC (32 ...122ºF) and max 75% of relative humidity without condensation. The device in the shipping packing can be transported and stored in the temperature: -20 ...+60ºC (-4 ...140ºF).

1.7. Terminal Plate



Symbol of terminal group	Terminal description
1	Connection sockets of the measuring package (**L1, L2, L3, N**) acc. to the order and version code.
2 i 3	Connection sockets: Alarms (**AL 1..6**) - 6 relays **NC** *or* **NO** Binary input (**BI 1..12**) – 12 inputs Analog outputs (**AO 1..4**) – 4 outputs
L, N, PE	Connection sockets of the supply voltage: **85..230..253 V a.c./d.c.**
24 V d.c. / 30 mA	Object feeders destined to supply external systems
RS485(1), RS485(2), Ethernet	Communication interfaces: RS485 Master, RS485 Slave, Ethernet 10-Base-T
⏚	Functional earthen terminals to connect screens

1.7.1. Mounting of the Power Supply Filter

During the device installation, apply the delivered power supply filter when connecting the supplying wire to the analyser.

To mount the power supply filter one must reeve all the three supplying wires (L,N,PE) through the filter core, creating a full loop around it (Fig.1.1).

Fig. 1.1. Connection of the power supply filter.

1.7.2. Connection of Measuring Signals

Note:

1. To connect measuring signals use the plug-in strip from ND1 accessories
2. Signal connections are presented on figures in the view from the ND1 terminal plate side.

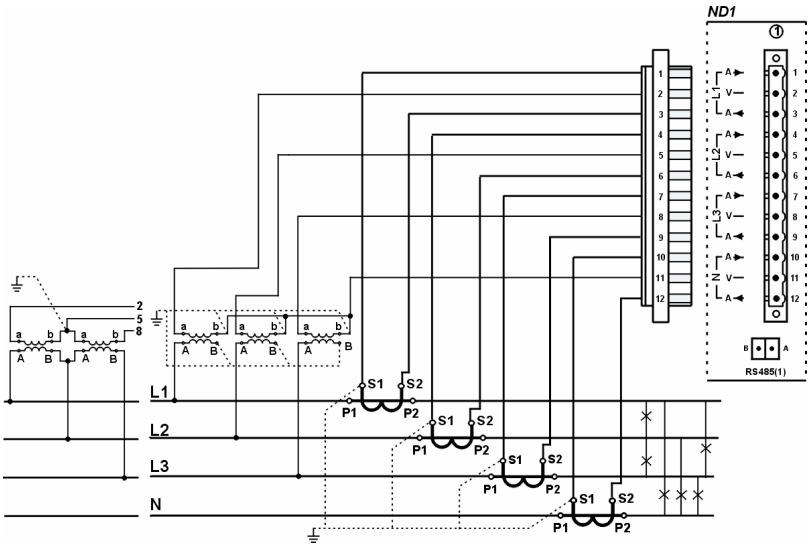


Fig. 1.2. Four-wire network. Indirect measurement with the use of 4 current transformers and 2 or 3 voltage transformers.

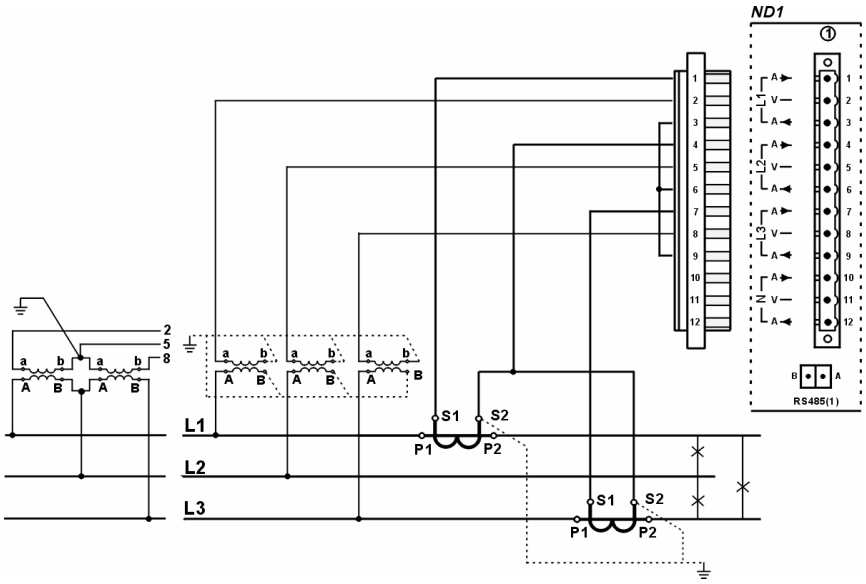


Fig. 1.3. Three-wire network. Indirect measurement with the use of 2 current transformers and 2 or 3 voltage transformers.

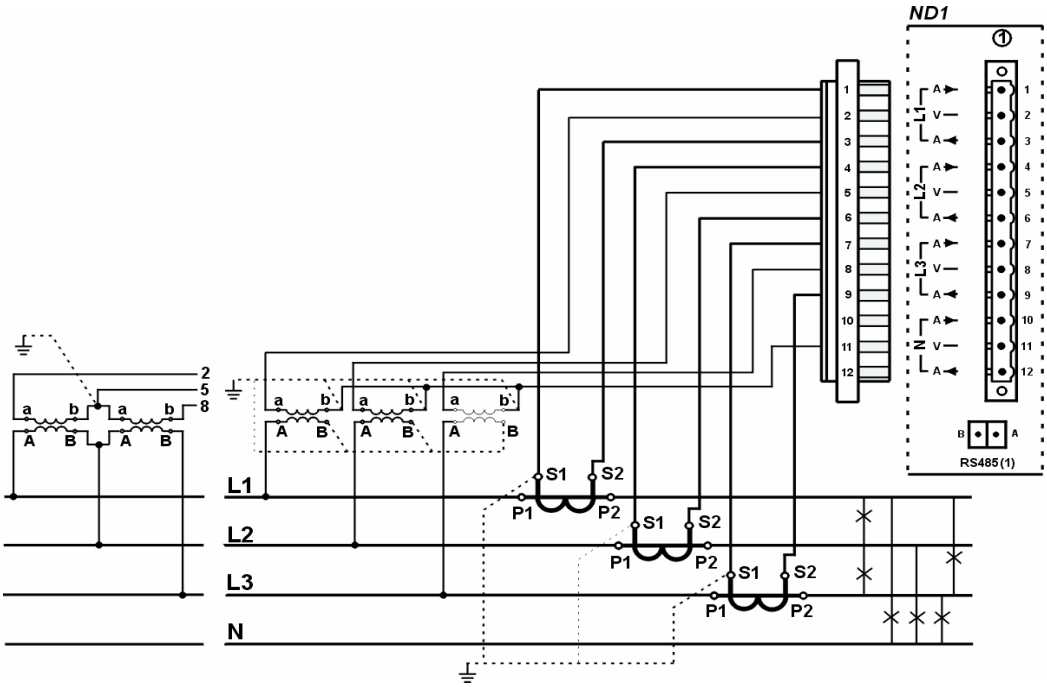


Fig. 1.4. Four-wire network. Indirect measurement with the use of 3 current transformers and 2 or 3 voltage transformers.

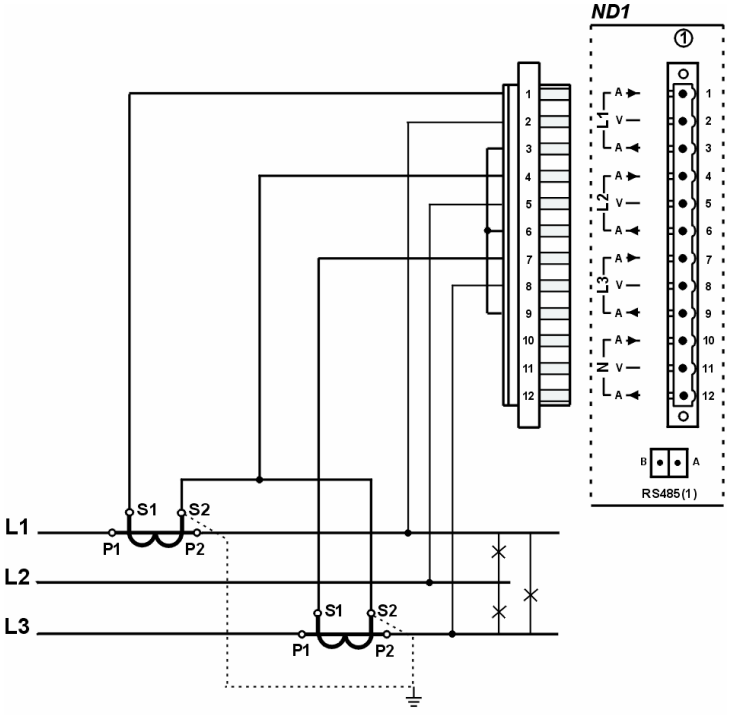


Fig. 1.5. Three-wire network. Semi-indirect measurement.

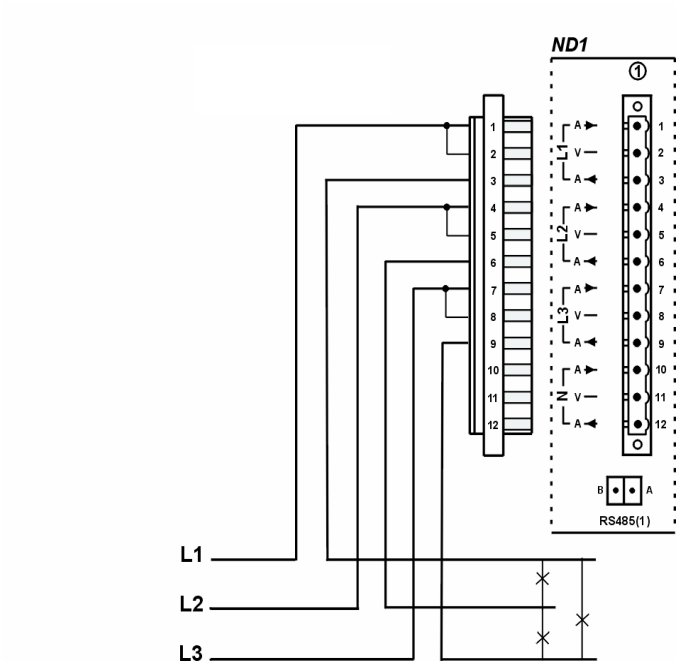


Fig. 1.6. Three-wire network. Direct measurement.

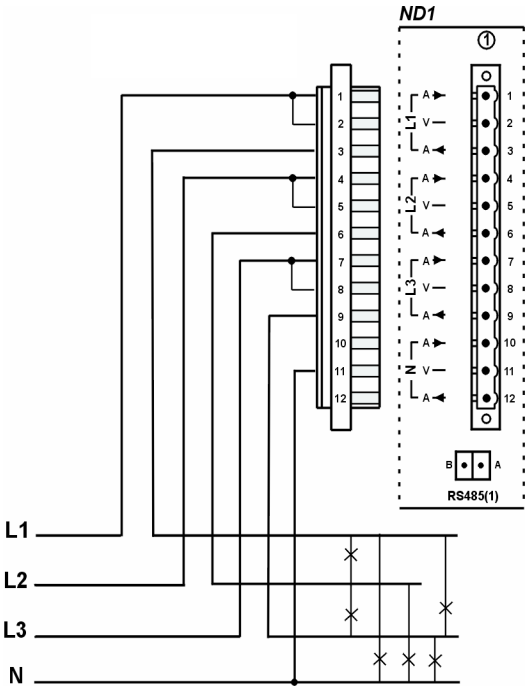


Fig. 1.7. Four-wire network. Direct measurement.

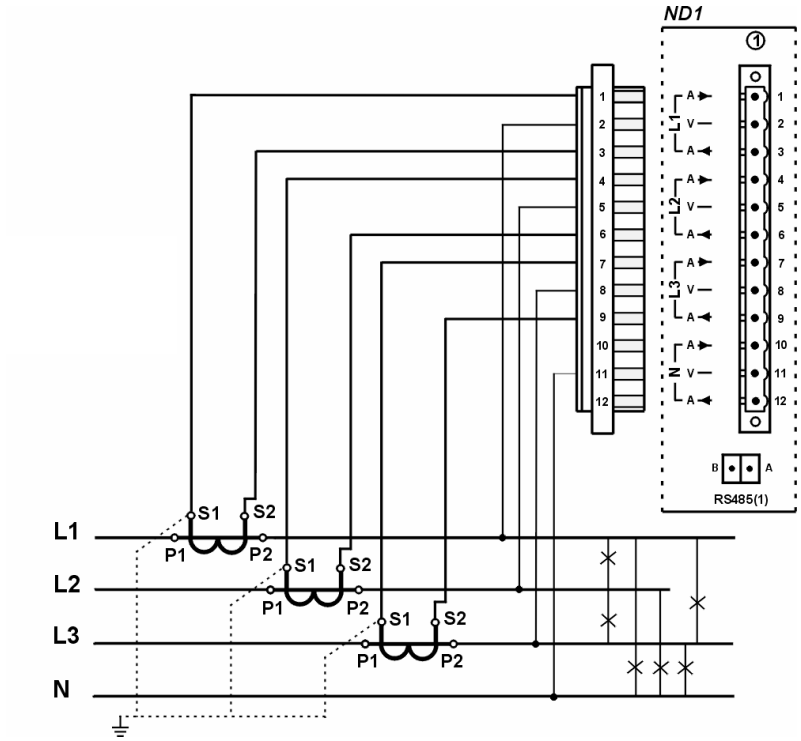


Fig. 1.8. Four-wire network. Semi-indirect measurement.

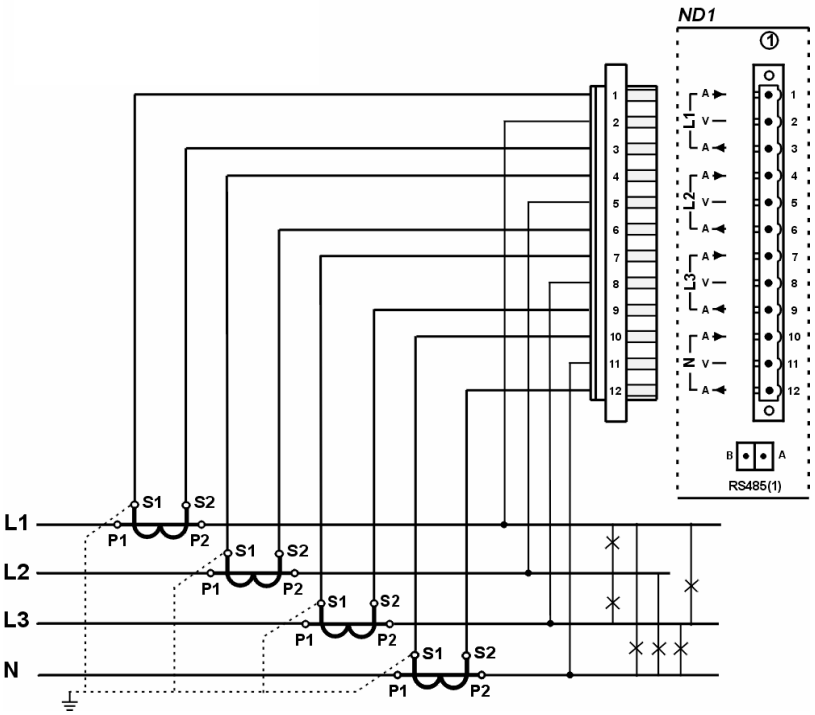
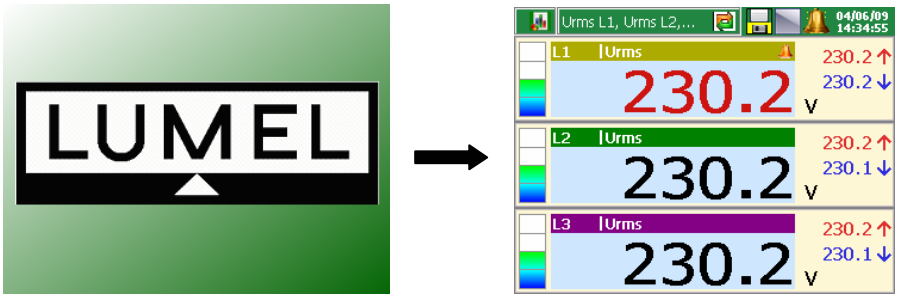


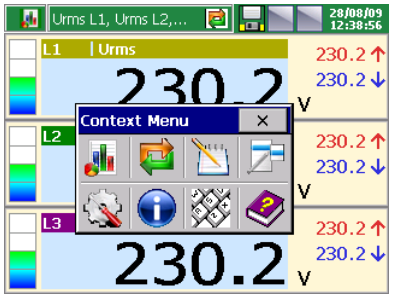
Fig. 1.9. Four-wire network. Indirect measurement with the use of 4 current transformers.

First Start and Basic Analyser Configuration

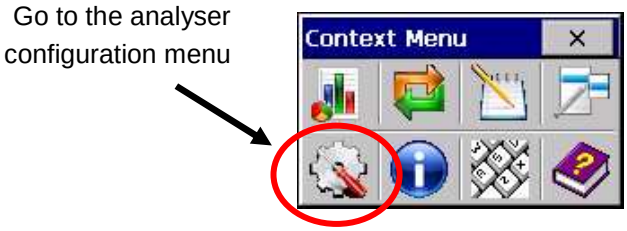
1. After turning on the power supply, the manufacturer's logo with the start screen appears. The logo is displayed during the time necessary for the initialization of analyser processes. Next, the data visualization screen appears.



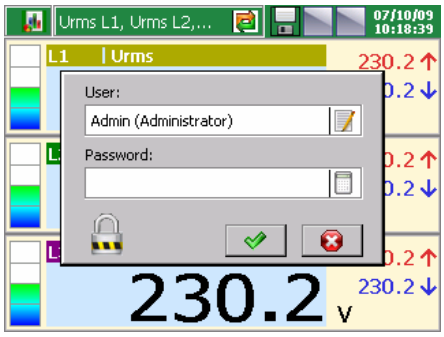
2. Please touch any place on the screen to bring the **Context Menu** up.



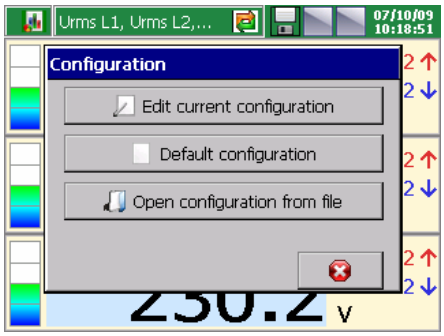
3. To switch to the analyser configuration, please select the following icon:



4. The user's selection window appears, who carries the given configuration out. **At the first start, there is only the Administrator user**. **The logging follows without the password,** after simply accepting the window. The Administrator **can edit another user's name and access password to the analyser** after transiting into the ND1 Control Panel.

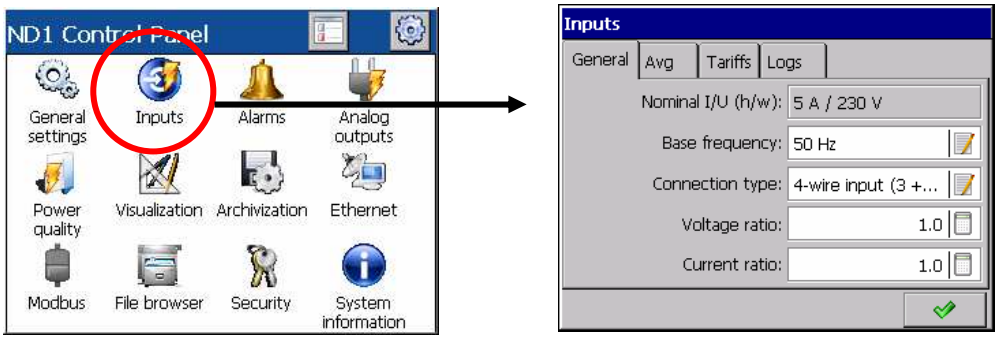


5. Next, select the kind of analyser parameter configuration. For now, please select **Edit current configuration**.

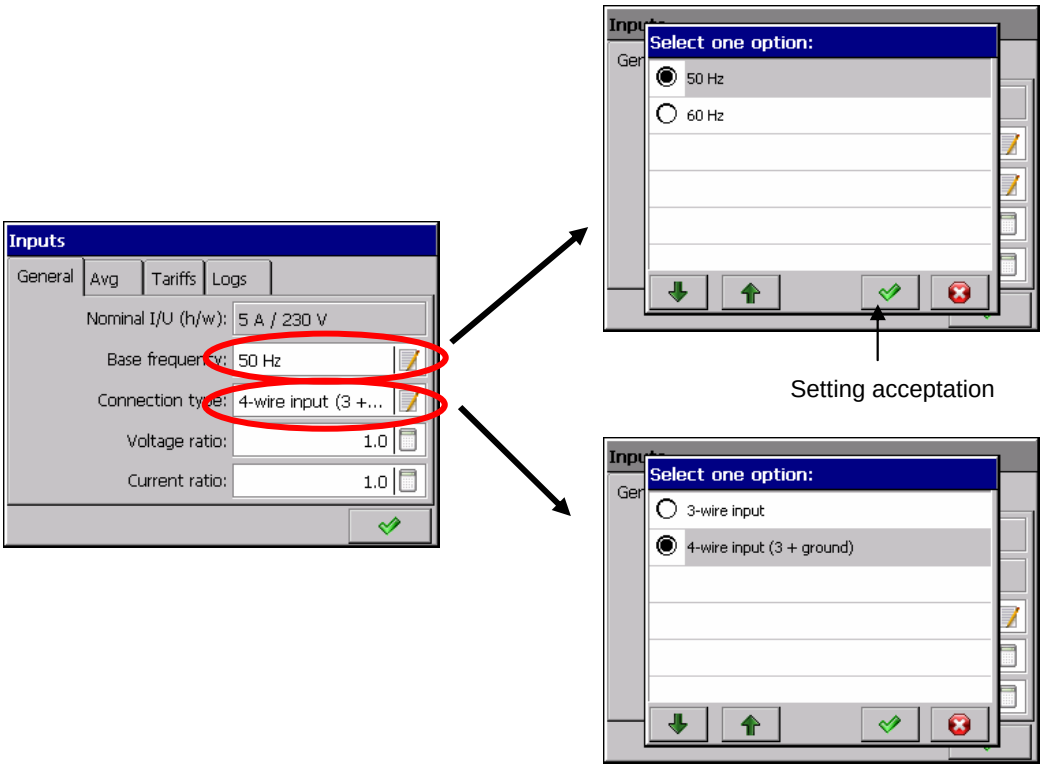


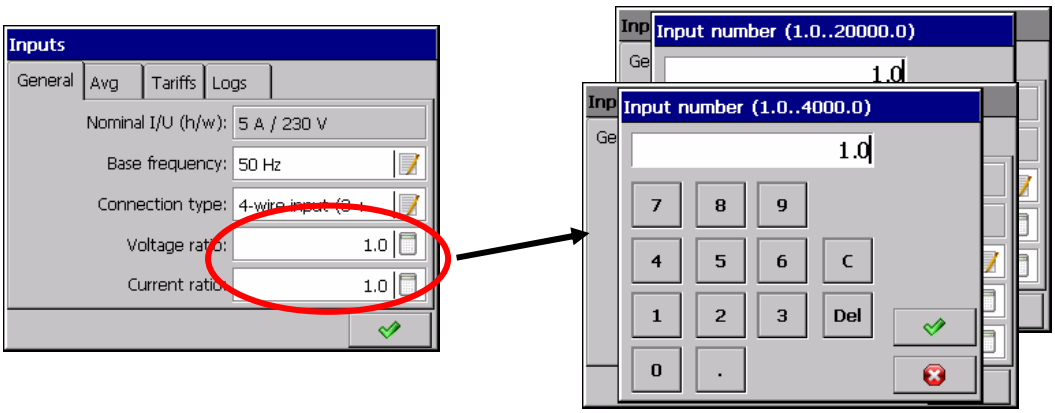
6. The ND1 control panel appears. This is the starting point to carry out a full configuration of the ND1 analyser.

7. Please select the **Inputs** icon. The configuration dialogue of available current inputs appears.

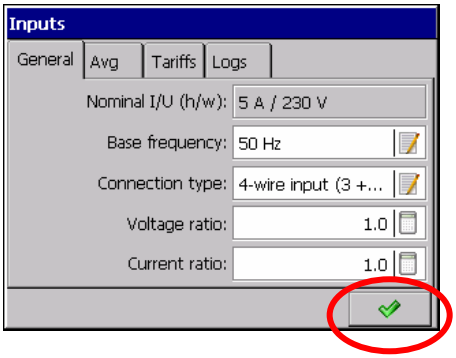


8. Now, you can set the suitable configuration in the compliance with the type of carried out connection in the “Connection type” option. On the same dialogue tab, you may also set the voltage and current ratios.

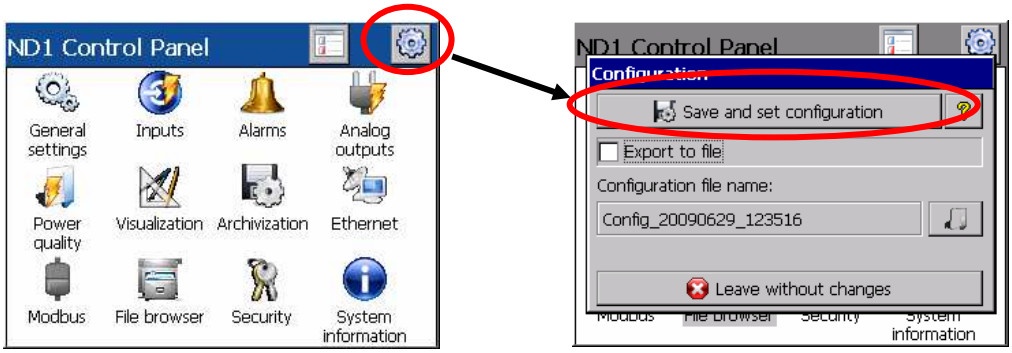




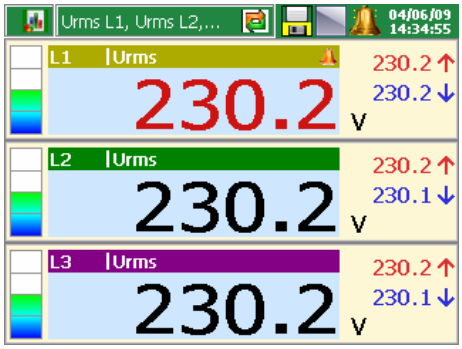
9. The dialogue closure follows through the acceptation push-button.



10. In order to save and set the new configuration, you must firstly press the closure button of the **ND1 Control Panel** and next, select the "**Save and set configuration**" option.



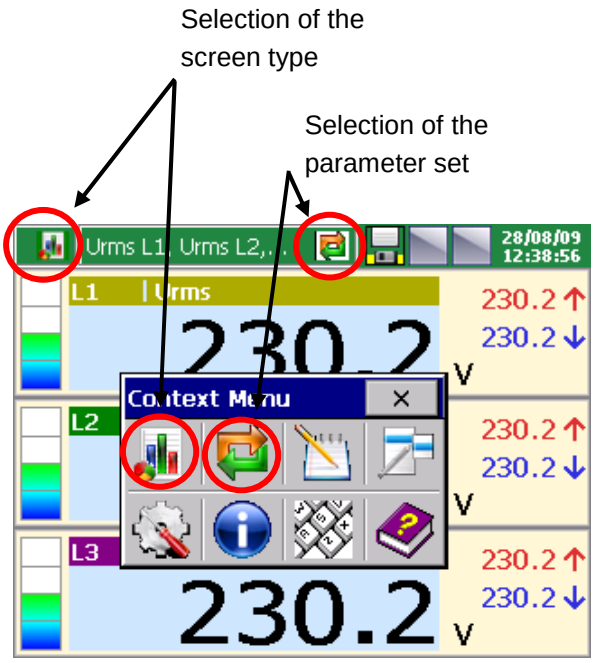
11. The analyser transits into the measuring mode and you can directly observe results on the device screen according to your configuration.



Basic operating in the measurement mode

After programming settings and saving a new configuration in ND1, data are presented in the graphic form chosen by a user. You can carry out the selection of the screen type and parameters from the given or programmed data sets. They may be changed from the **Context menu** and the **Information bar** of the currently displayed screen. The operation of buttons is as follows:

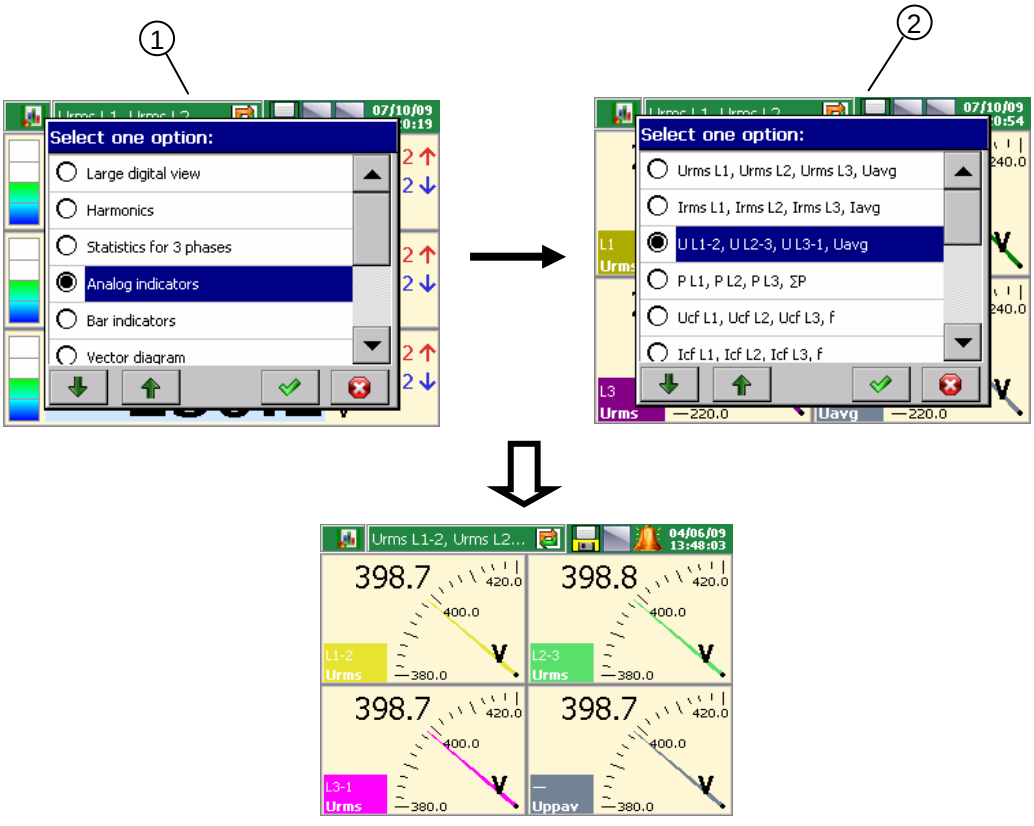
- The button of the group selection and parameter set in the Context menu display tables with available options. After marking the element, and acceptation, the screen switches to the chosen settings.
- Selection from the information bar – switches cyclically between available views (screen types or parameter sets).



Example of screen selection:

① Select the screen type

② Select the parameter set to display on the screen



CONTROL - MEASUREMENT - RECORDING

SALES PROGRAM

- DIGITAL and BARGRAPH PANEL METERS
- MEASURING TRANSDUCERS
- ANALOG PANEL METERS (DIN INSTRUMENTS)
- DIGITAL CLAMP-ON METERS
- INDUSTRIAL PROCESS and POWER CONTROLLERS
- CHART and PAPERLESS RECORDERS
- 1-PHASE and 3-PHASE WATT-HOUR METERS
- LARGE SIZE DISPLAY PANELS
- ELEMENTS OF INTEGRATION SYSTEMS
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